

PROTECTION AND CONSERVATION ACTIONS TAKEN BY TAIWAN OVER THE SOUTH CHINA SEA

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ABSTRACT

The South China Sea is a region of significant geopolitical tension and environmental concern. Taiwan asserts sovereignty over the Nansha (Spratly), Shisha (Paracel), Chungsha (Macclesfield Bank), and Dongsha (Pratas) Islands and has actively promoted peaceful utilisation and conservation efforts in the area. This paper underscores Taiwan's proactive role in protecting marine ecosystems and promoting stability in the South China Sea. Since 2008, Taiwan has emphasised international cooperation and sustainable governance, advocating for four key principles: peaceful dispute resolution, multilateral inclusion, freedom of navigation and overflight, and joint resource development. Taiwan has implemented five key actions: safeguarding fishing rights, engaging in multilateral consultations, promoting scientific research, enhancing humanitarian assistance, and strengthening legal expertise in maritime affairs. Scientific surveys have documented rich biodiversity, including coral reef ecosystems, fish, marine invertebrates, and sea turtles, particularly around Taiping Island and Dongsha Atoll. However, the region faces environmental threats such as illegal, unreported, and unregulated (IUU) fishing and marine debris. In response, Taiwan has established the Dongsha Atoll National Park, enhanced marine law enforcement, and launched conservation initiatives to combat threats like the crown-of-thorns starfish outbreaks and declining sea turtle populations. To strengthen environmental protection and security, Taiwan has reinforced its maritime patrol capabilities, upgraded infrastructure on Taiping Island, and promoted regional dialogue on marine protected areas. While geopolitical challenges persist, Taiwan remains committed to a balanced approach that integrates scientific research, resource sustainability, and international cooperation. Future conservation strategies may include designating the area as a Marine Protected Area (MPA) or an Other Effective Area-Based Conservation Measures (OECM) while continuing to engage in diplomatic efforts. This paper underscores Taiwan's proactive role in protecting marine ecosystems and promoting stability in the South China Sea.

INTRODUCTION

The South China Sea is the largest marginal sea in the Western Pacific, surrounded by the Asian continent and Taiwan to the North and West and the Philippine islands and Borneo to the east and south.¹ It is bounded in the North by South China, in the west by the Indochinese Peninsula, in the east by the islands of Taiwan and northwestern Philippines, and in the south by Borneo, eastern Sumatra and the Bangka Belitung Islands, encompassing an area of around 3,500,000 km². It communicates with the East China Sea via the Taiwan Strait, the Philippine Sea via the Luzon Strait, the Sulu Sea via the straits around Palawan, and the Java Sea via the Karimata and Bangka Straits.

Whether from the perspectives of history, geography, or international law, the Nansha (Spratly) Islands, Shisha (Paracel) Islands, Chungsha Islands (Macclesfield Bank), and Dongsha (Pratas) Islands, as well as their surrounding waters, are an inherent part of the Republic of China (ROC) territory and waters.²

Among them, Taiping Island (Itu Aba), the largest (0.5 square km) of the naturally formed Nansha (Spratly) Islands, has groundwater wells, natural vegetation, and phosphate ore and fishery resources, and has been garrisoned by ROC troops since 1956. Moreover, personnel stationed on the island cultivate vegetables and fruit and raising livestock. In 1959, personnel built the Guan Yin Temple, dedicated to the Bodhisattva of Compassion. In 1990, the Taiwan government put Taiping Island (Itu Aba) under the administrative jurisdiction of Qijin District of Kaohsiung City³.

Since 2008, the ROC government has actively promoted peaceful utilisation of the South China Sea. The ROC government calls on countries bordering the South China Sea to respect the spirit and principles of the UN Charter and UNCLOS, and to exercise restraint, safeguard peace and stability in the South China Sea, and refrain from taking any unilateral action that might escalate tensions⁴.

In 2016, the President Tsai government further declared four principles and five actions as follows⁵⁶, to reiterate the Sustainable Governance and Enduring Peace in the South China Sea.

Four Principles

1. Disputes in the South China Sea should be settled peacefully in accordance with international law and the law of the sea, including the United Nations Convention on the Law of the Sea (UNCLOS);
2. The ROC should be included in multilateral mechanisms aimed at resolving disputes;
3. States concerned have an obligation to uphold the freedom of navigation and overflight in the region; and
4. Disputes should be resolved by setting aside differences and promoting joint development. Through negotiations conducted based on equality, the ROC is willing to work with other States concerned to advance peace and stability, as well as protect and develop resources, in the region.

Five Actions

1. *Protection of fishing rights.* The ROC government shall strengthen its capabilities to ensure the safety of fishermen and fishing operations.
2. *Multilateral consultations.* The Ministry of Foreign Affairs shall enhance dialogue and communication with the States concerned, so as to reach a consensus on cooperation.
3. *Scientific collaboration.* The Ministry of Science and Technology shall increase quotas for international experts invited by related government agencies to travel to Taiping Island to conduct scientific research on ecological, geological, seismological, meteorological, and climate change matters.
4. *Humanitarian assistance and rescue.* The Ministry of Foreign Affairs shall work with relevant international and nongovernmental organisations to make Taiping Island a centre of humanitarian assistance and rescue operations, as well as a supply base.
5. *Cultivation of experts on the law of the sea.* The ROC government shall strengthen its ability to deal with issues pertaining to international law.

Facing many environmental impacts in this region, such as illegal, unreported, unregulated (IUU) fishing, marine debris, this article reviews the actions that have been taken to protect and conserve the natural resources, and analyses what should be done or considered in the future.

SCIENTIFIC SURVEY IN THE SOUTH CHINA SEA

Despite those geopolitical issues, the understanding of those natural resources is fundamental. Taiwan conducted a comprehensive scientific survey mainly on the Pratas Islands in the North, and the Taiping Island or Itu Aba, the largest island in the Spratlys.

In 1994, the Council of Agriculture conducted the first large-scale marine ecosystem survey. During that survey, there were over 450 and 396 species of fish recorded in Taiping Island and Dongsha Island, respectively, with the possibility of more than 11 new species. Taiping Island has 190 species of coral, while Dongsha Island has 137, with better coral growth conditions in Dongsha. There are also over 300 and 200 species of invertebrates. In a short period, five species of whales and dolphins were sighted, along with the collection of 117 and 114 species of seaweed. In terms of terrestrial ecology, there are 109 and 110 species of vascular plants, while the recorded bird species number 59 and 13 in Taiping Island and Dongsha Island, respectively.⁷

The National Science and Technology Council established the “Office for the International South China Sea Science and Research Centre” in Taiping Island and a research station in the Dongsha Atoll. These two stations are managed by National Sun Yet-Sen University. Some of the research outcomes are posted in website.⁸ In addition, the Ministry of the Interior, the Ministry of Agriculture, the Ministry of Transportation and Communications, the Ocean Affairs Council, and the Ministry of Environment all have related research in the South China Sea.

Furthermore, the Ocean Affairs Council was established in 2018 for better coordination of marine affairs and sets up “3S4M” vision (refer to National Security, Public Security, Personal Safety and Marine Pollution Prevention, Marine Waste Management, Marine Ecological Conservation, Marine Industry Development) to carry out comprehensive marine policy. Its subsidiary body, “the National Academia of Marine Research,” built a Research Station in Taiping

Island in 2021. Over the past years, NAMR has collaborated with government agencies and academic institutions to carry out a number of marine science surveys and conservation projects around Taiping Island. To date, a total of 31 voyages have been carried out, at least 28 research tasks, covering seabed topography and hydrological analysis, coral reef ecosystem and environmental DNA monitoring, large algae and hidden fish surveys, invertebrate and land hermit crab research, beach microplastic pollution assessment, long-term monitoring of sea temperature and light intensity, as well as supporting the Marine Conservation Administration's sea turtle surveys, crown-of-thorns starfish removal and coral reef habitat conditions and other marine scientific research and ecological issues.⁹¹⁰

THREATS TO NATURAL RESOURCES

Marine debris

Ocean litter has accumulated rapidly and is becoming a major environmental concern; it is worth noting that the surrounding countries, including Malaysia, China, Indonesia, the Philippines, and Vietnam, were major marine debris source countries in Asia.¹¹

Monthly marine debris collections during 2012–2016 at Dongsha Island showed that large amounts of litter, which varied monthly and annually in weight and quantity, and there were spatial differences in accumulation patterns between the north and south coasts. Styrofoam and plastic bottles were the two primary sources of macro-ocean litter, and most of the litter originated from China and Vietnam, which were collectively responsible for approximately 47.5%–63.7% per month.¹²

The simulation indicated that macro-ocean litter in the Western Philippine Sea, i.e. through the Luzon Strait between Taiwan and the Philippines, was an important contributor to the litter bulk from October to March, whereas the litter was predicted to mainly originate from the southwestern SCS from April to September. With an increasing windage effect, litter in the Taiwan Strait was predicted to be an additional major potential source. Surprisingly, a small proportion of the macro-ocean litter was predicted to continuously travel in the northern SCS for a long duration (> 2 years) before drifting onto Dongsha Island.¹³

IUU fishing

Due to the high biodiversity and abundant marine resources in the region, it has also suffered from illegal fishing activities, mainly from small-scale fisheries of surrounding countries, such as China and Vietnam.¹⁴¹⁵

In addition, China developed its distant water fisheries rapidly, which also caused international attention. It found lots Chinese large-sized, falling-net fishing fleet hotspot in the South China Sea.¹⁶ It has noticed by the Taiwanese coast guard in the Dongsha Islands, the South China Sea is no exception. Large ships carrying several small boats have illegally entered the waters around Dongsha Island and used poisonous methods to catch fish. Due to the shallow waters and lack of docks, the Taiwan Coast Guard Administration and the Dongsha National Park Administration have tried their best to use patrol boats to frequently drive them away, and even confiscated their illegal fishing equipment to reduce the prevalence of illegal fishing.¹⁷

PROTECTION AND CONSERVATION ACTIONS AND INITIATIVES

For the sustainability of the natural resources, the conservation and management measures are taken by Taiwan as follows.

Dongsha Atoll became a National Park

Due to the valuable marine ecosystem of the Dongsha Atoll, which features abundant coral sand, seagrass beds, and high biodiversity, the Ministry of the Interior (MOI) designated it as Taiwan's seventh national park in 2007. It is also Taiwan's first marine national park, covering an area of approximately 500 km², including Dongsha Island, which spans about 179 hectares.

In July 2010, the MOI formally established the Dongsha (Pratas) Atoll National Park Management Station, aiming to develop Dongsha as a hub for international marine research. To facilitate its management, the MOI established the Marine National Park Headquarters, which oversees the Dongsha Management Station under the National Park Service. The island is not open to the general public; access

is restricted to approved researchers and participants in occasional educational programs for university students and faculty.

Impacts from crown-of-thorns starfish

Another impact caused serious damage to coral: crown-of-thorns starfish (frequently abbreviated to COTS), *Acanthaster planci*.

In 2020, a crown-of-thorns starfish outbreak occurred on Taiping Island, causing the coral cover to decline sharply from 33 per cent in 2017 to only 0.9 per cent in 2021. It is estimated the average density is 630 indiv per hectare.¹⁸ By April 2021, observations indicated that the density of crown-of-thorns starfish had decreased to 0.06 to 0.003 individuals per square meter, marking the terminal stage of the outbreak.¹⁹

In 2023, nearly 1,000 crown-of-thorns starfish were removed, with observed densities of 9.64 individuals per hectare around Taiping Island, and 22.22 individuals per hectare on the eastern shallow reefs, suggesting a possible eastward migration of the outbreak²⁰. As of 2023, coral cover had recovered slightly to 5.5 per cent, with some monitoring stations recording up to 13 per cent, indicating a gradual recovery. During the same period, surveys recorded 208 species from 94 families of invertebrates and 456 fish species from 53 families and 180 genera. The presence of a considerable number of juvenile corals and diverse coral species further suggests a strong potential for ecosystem recovery.²¹

A similar situation happened in the Dongsha Islands in 2024, with high density. The MOI invited the public to organise the Dongsha Crown-of-Thorns Starfish (COTS) Task Force; over 400 experienced divers volunteered, with 141 selected for the mission. These volunteers were deployed to cull COTS using acetic acid injections, significantly mitigating their impact on the coral ecosystem.²²

The Taiwan representative raised the issue at the 33rd Workshop on Managing Potential Conflict in the South China Sea, held in Indonesia in August 2024, and proposed a collaborative initiative to address the outbreak of crown-of-thorns starfish (COTS) in the region. The proposal focused on assisting neighbouring countries with capacity-building to collectively tackle this ecological challenge. It garnered significant attention from attending Southeast Asian nations. Nevertheless, the COTS outbreak remains a pressing issue for the South China

Sea, severely impacting local coral reef ecosystems. By contributing its expertise, Taiwan can play a pivotal role in protecting the South China Sea's ecological environment while supporting coastal states in controlling these outbreaks, fostering both environmental stewardship and regional cooperation.

The outbreak dynamics of COTS are closely linked to coral reef fish populations, as many reef fish species prey on COTS larvae.²³ This raises concerns that illegal fishing in the South China Sea, which depletes reef fish populations, such as parrotfish and clams, may be a contributing factor to COTS outbreaks. The potential link between overfishing and COTS population surges warrants further investigation, underscoring the urgent need for improved marine resource management and enforcement to safeguard coral reef ecosystems in the region.

Sea turtle conservation

The population of green sea turtles has declined due to human-induced pressures such as illegal trade, bycatch, and land development, as well as the ongoing effects of climate change in the region^{24,25,26}. Both Taiping Island and Dongsha Island have recorded sea turtle nesting activity. Taiping Island serves as an important nesting habitat for many green sea turtles (*Chelonia mydas*).²⁷ In 2007, the Kaohsiung City Government designated Taiping Island as a sea turtle breeding and conservation zone under the Fisheries Act. The conservation area extends from the sandy beach to the outer edge of the forest as the terrestrial nesting habitat, while the marine habitat extends outward 12 nautical miles from the intertidal zone and low-tide line.

This protection may have contributed to the high density of sea turtles around Taiping Island, a density of 902 ± 601 (mean \pm SD) green turtles per square kilometre during high tides was observed. It is likely that large herbivores, such as green sea turtles, are the key consumers of seagrass on the shallow reef flats of Taiping Island. It might indirectly lead to lower seagrass abundance.²⁸

Even though the sea turtle population around Taiping Island shows signs of recovery, it still faces the threat of rising temperatures. A high clutch temperature induced a high proportion of abnormalities in hatchlings, which might decrease the fitness of hatchlings, especially for those with deformities. Shading sea turtle nests could decrease clutch temperatures; however, for mitigating sex bias, *i.e.*, predominantly female hatchlings under the current warming scenario, natural shading was insufficient²⁹.

Marine Environment Protection

The South China Sea, a vital artery for global maritime traffic, faces a heightened risk of shipwrecks, increasing the likelihood of oil spills. Taiwan has responded to two cases in recent years. One is the *Zambia Lydia*, which was grounded in October 2021. Due to shallow waters and weather conditions, it was not removed from Dongsha until June 2023. The Taiwan Port and Harbour Bureau covered the cost of over 70 million NTD and is seeking compensation from the shipowner.

Another one, Indonesia “Prince Capricorn VI”, grounded in early March 2025, was removed around two weeks later. Leveraging Taiwan’s expertise, the region could benefit from enhanced oil pollution prevention and early warning systems. Beyond its technical contribution, this capability positions Taiwan as a key player in fostering regional cooperation, while showcasing to the international community its professional prowess in marine pollution response and management.

Enforcement Strength

The Coast Guard Administration is responsible for law enforcement and safeguarding the islands under its jurisdiction in the South China Sea, as illegal fishing vessels are rampant in the surrounding waters. In 2015, the Kaohsiung District Prosecutors’ Office dispatched prosecutors to Dongsha Island to investigate violations. In 2016, the Coast Guard Administration (CGA) intercepted a Chinese fishing vessel carrying 15 metric tons of coral and three protected green sea turtles. The case was prosecuted under the Wildlife Conservation Act, and the involved fishermen were transferred to Kaohsiung for legal proceedings. The prosecutor charged the vessel owner and the captain with multiple offences, including illegal entry under Article 74 of the Immigration Act and hunting within a national park under Articles 13(2) and 25 of the National Park Act. Additionally, Li was indicted for violating Article 35(1) and Article 40(2) of the Wildlife Conservation Act for unauthorised trade in protected wildlife.

For increasing the protection/patrol capacity, the Coast Guard Administration (CGA) has been implementing two major projects since 2018: (1) the Taiping Island Port Survey and Wharf Renovation Project in the Nansha (Spratly) Islands, and (2) the Dongsha Atoll Navigational and Berthing Facility Improvement and

Coastal Reinforcement Project. The specific objectives of these projects include: (1) Enhancing Law Enforcement Capabilities; (2) Strengthening Defense Preparedness, and (3) Enhancing Humanitarian Aid and Research Capacity.³⁰

However, China's maritime militia has demonstrated increasing operational sophistication in the South China Sea, as exemplified by the incident on 04 March 2025, when a Philippine government vessel was encircled by Chinese maritime militia boats and China Coast Guard ships.

On the other hand, Chinese illegal fishing vessels have appeared in flotillas, with up to six mother ships deploying as many as 29 small boats at a time since February 2025. To safeguard the valuable marine resources of the Dongsha waters, the Coast Guard Administration (CGA) promptly initiated law enforcement measures. However, during the Coast Guard's efforts to expel and crack down on these vessels, Chinese Coast Guard ships aggressively escorted the fishing boats and harassed the Dongsha waters. In response, the CGA decisively drove them away and detained six small boats, fully committed to defending national sovereignty and enforcing marine conservation in the Dongsha area.³¹

The CGA strongly condemns the Chinese Coast Guard's interference with Taiwan's law enforcement, disregarding the universal values of marine sustainability. To counter these hostile actions, the CGA has intensified enforcement operations, forcefully intercepting and inspecting Chinese fishing vessels. Should any Chinese Coast Guard ships attempt to disrupt Taiwan's enforcement efforts, we will immediately block and monitor them while continuing efforts to drive away both the Chinese Coast Guard and fishing vessels.³²

CONCLUSION

The South China Sea remains a highly contested region, with multiple nations actively engaging in land reclamation and military base construction, leading to heightened tensions. Under Taiwan's policy of "*shelving disputes and pursuing joint development*," the development of Taiping Island is guided by principles of peace, humanitarian aid, scientific research, and sustainability. Taiwan remains committed to upholding freedom of navigation and overflight in the region while promoting regional peace through equitable dialogue and cooperation with neighbouring countries.

The surrounding nations of SCS assert jurisdiction over their respective Exclusive Economic Zones (EEZs) in this region, leading to complex and overlapping claims. In light of the need for sustainable management, various proposals have advocated for designating the area as a “Peace Park,” “Marine Protected Areas (MPA)/Marine Peace Park,” Regional Fishery Management Organisation, etc.³³ However, such initiatives face significant geopolitical and legal challenges.

In contrast, the designation of a Marine Protected Area (MPA) within the three-nautical-mile zone around Taiping Island is likely to be legally less contentious. Establishing a comprehensive ecological database is an essential first step, forming the foundation for informed decision-making.

Regardless of the chosen approach, continuous scientific investigation and the pursuit of sustainable resource management strategies must remain ongoing priorities. If the BBNJ (Biodiversity Beyond National Jurisdiction) Agreement is ratified, it will be crucial to assess whether the South China Sea could emerge as a focal point for international conservation advocacy.

A balanced approach that integrates humanitarian aid, environmental protection, and sustainable resource management should be considered. Exploring the possibility of designating the area as an Other Effective Area-Based Conservation Measure (OECM) could also provide a flexible framework for conservation while accommodating responsible use.

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